Defense Advanced Research Projects Agency (DARPA)
DoD 23.4 Small Business Innovation Research (SBIR) Annual BAA
Proposal Submission Instructions Release 11

INTRODUCTION

To achieve DARPA's mission to create technological surprise, the agency makes strategic, early investments in science and technology that will have long-term positive impacts on our national security. The pace of discovery in both science and technology is accelerating worldwide, resulting in new fields of study and the identification of scientific areas ripe for small business utilization through the SBIR and STTR programs. Small businesses are critical for developing technology to support national security. Proposers are encouraged to consider whether the R/R&D being proposed to DoD Components also has private sector potential, either for the proposed application or as a base for other applications. The topics below focus on technical domains important to DARPA's mission pursuing innovative research concepts that fall within one of its technology offices. More information about DARPA's technical domains and research topics of interest may be found at: http://www.darpa.mil/about-us/offices.

Proposers responding to a topic in this BAA must follow all general instructions provided in the Department of Defense (DoD) SBIR Program BAA. DARPA requirements in addition to or deviating from the DoD Program BAA are provided in the instructions below.

Proposers are encouraged to thoroughly review the DoD Program BAA and register for the DSIP Listserv to remain apprised of important programmatic and contractual changes.
- The DoD Program BAA is located at: https://www.defensesbirsttr.mil/SBIR-STTR/Opportunities/#announcements. Be sure to select the tab for the appropriate BAA cycle.
- Register for the DSIP Listserv at: https://www.dodsbirsttr.mil/submissions/login.

Specific questions pertaining to the administration of the DARPA Program and these proposal preparation instructions should be directed to: DARPA Small Business Programs Office at SBIR_BAA@darpa.mil. DSIP Topic Q&A will NOT be available for these DARPA topics. Technical questions related to improving the understanding of a topic's requirements must be submitted to SBIR_BAA@darpa.mil by the deadline listed below.

The following dates apply to this DARPA Topic release:

August 02, 2023: Topic issued for pre-release
August 17, 2023: Topic opens; DARPA begins accepting proposals via DSIP
September 12, 2023: Deadline for technical question submission
September 19, 2023: Deadline for receipt of proposals no later than **12:00 pm ET**

DIRECT TO PHASE II PROPOSAL GUIDELINES
Proposers should refer to the DARPA Direct to Phase II SBIR Proposal Instructions, provided in Appendix A.

Current Release Award Structure

White Paper & Slide Deck Proposal

Topic Number	Direct to Phase II					
	Technical Volume		Award Amount	Period of Performance (PoP)	Option Amount	Option Period
	White Paper	Slide Deck				
HR0011SB20234-16	20 pages	15 pages	$1,000,000	9 months	$2,000,000	13 months

Technical Volume (Volume 2) – White Paper & Slide Deck Format
If a proposer can provide adequate documentation to substantiate that the scientific and technical merit and feasibility described in the Phase I section of the topic has been met and describes the potential commercial applications, the Direct to Phase II (DP2) authority allows the Department of Defense (DoD) to make an award to a small business concern under Phase II of the SBIR program without regard to whether the small business concern was provided an award under Phase I of an SBIR program. This topic is accepting DP2 proposal submissions.

The white paper shall not exceed 20 pages, and the slide deck shall not exceed 15 pages. For information on the content of these elements of the technical proposal and the commercialization strategy, please see Attachment A: DARPA Direct to Phase II (DP2) Instructions.

Content of the Technical Volume
Please see Appendix A for complete instructions on the White Paper/Slide Deck technical volume content.

Cost Volume (Volume 3)
Please see the chart above for award amounts listed by topic. Proposers are required to use the Direct to Phase II – Volume 3: Cost Proposal Template (Excel Spreadsheet) provided on the DARPA Small Business site (https://www.darpa.mil/work-with-us/for-small-businesses/participate-sbir-sttr-program). Subcontractors may also submit unsanitized costs using this template directly to DARPA at SBIR-BAA@darpa.mil.

Please review the updated Percentage of Work (POW) calculation details included in the DoD Program BAA. DARPA will occasionally accept deviations from the POW requirements with a letter of explanation or approval from the Funding Agreement officer.

Company Commercialization Report (CCR) (Volume 4)
Completion of the CCR as Volume 4 of the proposal submission in DSIP is required. Please refer to the DoD SBIR Program BAA for full details on this requirement. Information contained in the CCR will not be considered by DARPA during proposal evaluations.

Supporting Documents (Volume 5)
In addition to the documents required by DoD, small businesses may also submit additional documentation to support the Technical Volume (Volume 2) and the Cost Volume (Volume 3) in Volume 5. **See Appendix A for required certifications that must be included in Volume 5**. For additional information, see the SBIR 23.4 Annual Program Broad Agency Announcement (BAA) at https://www.defensesbirsttr.mil/SBIR-STTR/Opportunities/.

DISCRETIONARY TECHNICAL AND BUSINESS ASSISTANCE (TABA)
DARPA does not offer TABA funding.

EVALUATION AND SELECTION
All proposals will be evaluated in accordance with the evaluation criteria listed in the DoD SBIR 2023.4 BAA. DARPA will conduct an evaluation of each conforming proposal. Proposals that do not comply with the requirements detailed in this BAA and the research objective(s) of the corresponding topic are considered non-conforming and therefore are not evaluated nor considered for award.

Using the evaluation criteria, the Government will evaluate each proposal in its entirety, documenting the strengths and weaknesses relative to each evaluation criterion, and, based on these identified strengths and weaknesses, determine the proposal's overall selectability. Proposals will not be evaluated against each other during the evaluation process, but rather evaluated on their own individual merit to determine how well the proposal meets the criteria stated in this BAA and the corresponding DARPA topic.

Awards will be made to proposers whose proposals are determined to be the most advantageous to the Government, consistent with instructions and evaluation criteria specified in the DoD SBIR 2023.4 BAA and availability of funding. Given the limited funding available for each topic released, not all proposals considered selectable will be selected for funding.

For the purposes of this proposal evaluation process, a selectable proposal is defined as follows:

Selectable: A selectable proposal is a proposal that has been evaluated by the Government against the evaluation criteria listed in the DoD SBIR 2023.4 BAA and DARPA topic, and the strengths of the overall proposal outweighs its weaknesses. Additionally, there are no accumulated weaknesses that would require extensive negotiations and/or a resubmitted proposal.

For the purposes of this proposal evaluation process, a non-selectable proposal is defined as follows:

Non-Selectable: A proposal is considered non-selectable when the proposal has been evaluated by the Government against the evaluation criteria listed in the DoD SBIR 2023.4 BAA and DARPA topic, and the strengths of the overall proposal do not outweigh its weaknesses.

Proposing firms will be notified of selection or non-selection status for a Phase I award within 90 days of the closing date of the DoD SBIR 2023.4 BAA. It is the policy of DARPA to treat all proposals as source selection information and to disclose their contents only for the purpose of evaluation. Restrictive notices notwithstanding, during the evaluation process, submissions may be handled by support contractors for administrative purposes and/or to assist with technical evaluation. All DARPA support contractors are expressly prohibited from performing DARPA-sponsored technical research and are bound by appropriate nondisclosure agreements. Input on technical aspects of the proposals may be solicited by DARPA from other Government and/or non-Government consultants/experts who are strictly bound by the appropriate non-disclosure requirements. No submissions will be returned. Upon completion of the evaluation and selection process, an electronic copy of each proposal received will be retained at DARPA.

Proposal titles, abstracts, anticipated benefits, and keywords of proposals that are selected for contract award will undergo a DARPA Policy and Security Review. Proposal titles, abstracts, anticipated benefits, and keywords are subject to revision and/or redaction by DARPA. Final approved versions of proposal titles, abstracts, anticipated benefits, and keywords may appear on the DoD SBIR/STTR awards website and/or the SBA's SBIR/STTR award website (https://www.sbir.gov/sbirsearch/award/all).

Refer to the DoD SBIR 2023.4 Program BAA for procedures to protest the Announcement.

As further prescribed in FAR 33.106(b), FAR 52.233-3, Protests regarding the selection decision should be submitted to:

> DARPA
> Contracts Management Office (CMO)
> 675 N. Randolph Street
> Arlington, VA 22203
> E-mail: scott.ulrey@darpa.mil and sbir@darpa.mil

AWARD AND CONTRACT INFORMATION

1. General Award Information

Multiple awards are anticipated. DARPA may award FAR-based government contracts (Firm- Fixed Price or Cost-Plus Reimbursement) or Other Transactions for Prototypes agreement (under the authority of 10 U.S.C. § 4022) subject to approval of the Contracting Officer. The amount of resources made available for each topic issued under this BAA will depend on the quality of the proposals received and the availability of funds.

Majority Ownership in Part. Proposers that are more than 50% owned by multiple venture capital operating companies (VCOC), hedge funds (HF), private equity firms (PEF), or any combination of these as set forth in 13 C.F.R. § 121.702, are eligible to submit proposals in response to DARPA topics advertised within this BAA.

For proposers that are a member of this ownership class the following must be satisfied for proposals to be accepted and evaluated:
a. Prior to submitting a proposal, firms must register with the SBA Company Registry Database.
b. The proposer within its submission must submit the Majority-Owned VCOC, HF, and PEF Certification. A copy of the SBIR VC Certification can be found on https://www.darpa.mil/work-with-us/for-small-businesses/participate-sbir-sttr-program, under SBIR/STTR BAA Forms. Include the SBIR VC Certification in the Supporting Documents (Volume 5).
c. Should a proposer become a member of this ownership class after submitting its proposal and prior to any receipt of a funding agreement, the proposer must immediately notify the Contracting Officer, register in the appropriate SBA database, and submit the required certification which can be found under SBIR/STTR BAA Forms and Templates on https://www.darpa.mil/work-with-us/for-small-businesses/participate-sbir-sttr-program.

The Government reserves the right to select for negotiation all, some, one, or none of the proposals received in response to this announcement and to make awards with or without communications with proposers. Additionally, the Government reserves the right to award all, some, one, or none of the options on the contract(s)/agreement(s) of the performers based on available funding and technical performance. If warranted, portions of resulting awards may be segregated into pre-priced options. Additionally, DARPA reserves the right to accept proposals in their entirety or to select only portions of proposals for award. In the event that DARPA desires to award only portions of a proposal, negotiations may be opened with that proposer. The Government reserves the right to fund proposals in phases with options for continued work, as applicable.

The Government reserves the right to request any additional, necessary documentation once it makes the award instrument determination. The Government reserves the right to remove a proposal from award consideration should the parties fail to reach agreement on award terms, conditions, and price within a

reasonable time, and/or the proposer fails to provide requested additional information within three business days.

In all cases, the Government Contracting Officer reserves the right to select award instrument type, regardless of instrument type proposed, and to negotiate all instrument terms and conditions with selectees. DARPA will apply publication or other restrictions, as necessary, if it determines that the research resulting from the proposed effort will present a high likelihood of disclosing performance characteristics of military systems or manufacturing technologies that are unique and critical to defense. Any award resulting from such a determination will include a requirement for DARPA permission before publishing any information or results on the program. For more information on publication restrictions, see the DoD SBIR 2023.4 BAA.

Because of the desire to streamline the award negotiation and program execution process, proposals identified for negotiation will result in negotiating a type of instrument for award that is in the best interest of the Government. In the case of an OT for Prototype agreement under DARPA's authority to award OTs for prototype projects, 10 U.S.C. § 4022, use of an OT provides significant opportunities for flexible execution to assist in meeting DARPA's aggressive SBIR/STTR program goals.

All proposers that wish to consider an OT award should carefully read the following:

The flexibility of the OT award instrument is beneficial to the program because the Performer will be able to apply its best practices as required to carry out the research project that may be outside of the Federal Acquisition Regulation (FAR) process-driven requirements. Streamlined practices will be used, such as milestone-driven performance, intended to reduce time and effort on award administration tasks and permit performers to focus on the research effort and rapid prototyping. Because of this ability, OTs provide the Agreements Officer the flexibility to create an award instrument that contains terms and conditions that promote commercial transition, reduce some administratively burdensome acquisition regulations, and meet SBIR/STTR program goals.

Proposers must only propose an OT agreement with fixed payable milestones. Fixed payable milestones are fixed payments based on successful completion of the milestone accomplishments agreed to in the milestone plan. Refer to the Other Transactions for Prototypes Fact Sheet and Other Transaction for Prototype Agreement, available at https://www.darpa.mil/work-with-us/for-small-businesses/participate-sbir-sttr-program. Specific milestones will be based upon the research objectives detailed in the topic.

Please see https://www.darpa.mil/work-with-us/for-small-businesses/participate-sbir-sttr-program for more information on OTs.

2. Transition and Commercialization Support Program (TCSP)

DARPA will provide services to Phase II or DP2 awardees upon contract execution through the Transition and Commercialization Support Program (TCSP) at no cost to awardees. The TCSP goal is to maximize the potential for SBIR/STTR companies to move their technology beyond Phase II and into other research and development programs for further maturity or into solutions or products for DoD acquisition programs, other Federal programs, and/or the commercial market. Please visit https://www.darpa.mil/work-with-us/for-small-businesses/commercialization-continued for more information on DARPA TCSP.

3. Embedded Entrepreneurship Initiative

Awardees of SBIR funding pursuant to this BAA may be eligible to participate in the DARPA Embedded Entrepreneurship Initiative (EEI) during the Period of Performance. Invitation to participate in EEI is at the sole discretion of the Government based on evaluation of technical and commercial factors and

subject to program balance and the availability of funding. EEI is a limited scope program offered by DARPA, at DARPA's discretion, to a small subset of awardees. The goal of DARPA's EEI is to increase the likelihood that DARPA-funded technologies take root in the U.S. and provide new capabilities for national defense. EEI supports DARPA's mission "to make pivotal investments in breakthrough technologies and capabilities for national security" by accelerating the transition of innovations out of the lab and into new capabilities for the Department of Defense (DoD). EEI investment supports development of a robust and deliberate Go-to-Market strategy for selling technology product to the government and commercial markets and positions DARPA awardees to attract U.S. investment. The following is for informational and planning purposes only and does not constitute solicitation of proposals to the EEI.

There are three elements to DARPA's EEI: (1) A Senior Commercialization Advisor (SCA) from DARPA who works with the Program Manager (PM) to examine the business case for the awardee's technology and uses commercial methodologies to identify steps toward achieving a successful transition of technology to the government and commercial markets; (2) Connections to potential industry and investor partners via EEI's Investor Working Groups; and (3) Additional funding on an awardee's contract for the awardee to hire an embedded entrepreneur to achieve specific milestones in a Go-to-Market strategy for transitioning the technology to products that serve both defense and commercial markets. This embedded entrepreneur's qualifications should include business experience within the target industries of interest, experience in commercializing early-stage technology, and the ability to communicate and interact with technical and non-technical stakeholders. Funding for EEI is typically no more than $250,000 per awardee over the duration of the award. An awardee may apportion EEI funding to hire more than one embedded entrepreneur, if achieving the milestones requires different expertise that can be obtained without exceeding the awardee's total EEI funding. The EEI effort is intended to be conducted concurrent with the research program without extending the period of performance.

EEI Application Process:
After receiving an award under the solicitation, awardees interested in being considered for EEI should notify their DARPA Program Manager (PM) during the period of performance. Timing of such notification should ideally allow sufficient time for DARPA and the awardee to review the awardee's initial transition plan, identify milestones to achieve under EEI, modify the award, and conduct the work required to achieve such milestones within the original award period of performance. These steps may take 9-18 months to complete, depending on the technology. If the DARPA PM determines that EEI could be of benefit to transition the technology to product(s) the Government needs, the PM will refer the performer to DARPA Commercial Strategy.

DARPA Commercial Strategy will then contact the performer, assess fitness for EEI, and in consultation with the DARPA technical office, determine whether to invite the performer to participate in the EEI. Factors that are considered in determining fitness for EEI include DoD/Government need for the technology; competitive approaches to enable a similar capability or product; risks and impact of the Government's being unable to access the technology from a sustainable source; Government and commercial markets for the technology; cost and affordability; manufacturability and scalability; supply chain requirements and barriers; regulatory requirements and timelines; Intellectual Property and Government Use Rights, and available funding.

Invitation to participate in EEI is at the sole discretion of DARPA and subject to program balance and the availability of funding. EEI participants' awards may be subsequently modified bilaterally to amend the Statement of Work to add negotiated EEI tasks, provide funding, and specify a milestone schedule which will include measurable steps necessary to build, refine, and execute a Go-to-Market technology transition plan aimed at delivering new capabilities for national defense. Milestone examples are available at: https://www.darpa.mil/work-with-us/contract-management.

Awardees under this solicitation are eligible to be considered for participation in EEI, but selection for award under this solicitation does not imply or guarantee participation in EEI.

For more information, please refer to the EEI website https://eei.darpa.mil/.

4. DARPA Toolbox Initiative

DARPA Toolbox is an Agency-wide effort to provide open licensing opportunities with commercial technology vendors to the researchers behind DARPA programs. DARPA Toolbox provides easy, low-cost, scalable access to state-of-the-art tools and intellectual property (IP) under predictable legal terms and streamlined acquisition procedures. The goal is to reduce performer reliance on low-quality, low-cost tools and IP that increase execution risks and complicate post-DARPA transitions.

Through this initiative, DARPA performers are granted access to select vendor tools and technologies throughout the life of their contractual relationship with the Agency. The Toolbox suppliers bring to the table proven technologies commonly used in state-of-the art commercial microelectronics or system design methodologies.

DARPA Toolbox program information and a full list of participating suppliers can be found at https://www.darpa.mil/work-with-us/darpa-toolbox-initiative. If there are tool or technologies of interest, contact the Supplier POC listed for the product, referencing the DARPA Toolbox Initiative. The Supplier POC will provide advice on products and pricing information. Include any non-production pricing quotes in your proposal. Products and pricing are between you and the suppliers – *do not* contact DARPA directly.

ADDITIONAL INFORMATION

DARPA intends to use electronic mail for all correspondence regarding these topics. Questions related to the technical aspect of the research objectives and awards specifically related to a topic should be emailed to SBIR_BAA@darpa.mil. Please reference the topic number in the subject line. All questions must be in English and must include the name, email address, and the telephone number of a point of contact.

DARPA will attempt to answer questions in a timely manner; however, questions submitted within seven (7) calendar days of the proposal due date listed herein may not be answered. DARPA will post a consolidated Frequently Asked Questions (FAQ) document. To access the posting please visit: http://www.darpa.mil/work-with-us/opportunities. Under the topic number summary, there will be a link to the FAQ. The FAQ will be updated on an ongoing basis until one week prior to the proposal due date.

Technical support for the Defense SBIR/STTR Innovation Portal (DSIP) is available Monday through Friday, 9:00 a.m. – 5:00 p.m. ET. Requests for technical support must be emailed to DoDSBIRSupport@reisystems.com with a copy to SBIR_BAA@darpa.mil.

HR0011SB20234-17   TITLE: Artificial Intelligence Cyber Challenge (AIxCC)

OUSD (R&E) CRITICAL TECHNOLOGY AREA(S): Advanced Computing and Software, Integrated Sensing and Cyber, Trusted AI and Autonomy

OBJECTIVE: The objective of the Artificial Intelligence Cyber Challenge (AIxCC) SBIR topic is to develop innovative systems guided by Artificial Intelligence (AI) and Machine Learning (ML) to semi-automatically find and fix software vulnerabilities.

DESCRIPTION: In an increasingly interconnected world, software undergirds everything from modern financial systems to public utilities, and older software is unable to be secured manually at scale [1] [2]. Critical infrastructure is among the worst affected; most vulnerabilities within these systems go unidentified, and a majority of the identified vulnerabilities have no patch or mitigation [3]. This state of affairs presents a serious threat to U.S. national security.

Today, manual vulnerability discovery and remediation requires subject matter experts (SME) who can identify and investigate vulnerabilities within software and develop fixes for them. Beginning with the invention of fuzz testing in 1988 [4], the development of tools and techniques for automatic vulnerability discovery and remediation (AVD&R) has continued to move forward toward systems that implement logical reasoning and program analysis approaches to identify and characterize software vulnerabilities. Recent advancements in AI and ML, such as Large Language Models (LLMs), have potential to push AVD&R beyond the inherent barriers of today's logical reasoning systems. By leveraging their symbolic abstractions, neural networks and deep learning techniques can be harnessed to reduce false positives and produce more precise tooling, significantly reducing human intervention. A neuro-symbolic approach could learn novel vulnerability patterns, moving far beyond the capabilities of current tools. Further, by leveraging ML to generate code, patches can be generated automatically at scale. LLMs, have shown enormous potential for reasoning over software, and provide a strong foundation for innovation in AVD&R. Automatic code generation tools, such as CodePilot [5], have been able to write parts of software with little human-intervention. Further, ChatGPT [6] [7] has been shown to be able to accurately find, characterize, and fix certain vulnerabilities. LLMs will also enable new approaches to computer-human teaming for AVD&R, ameliorating the friction found in current tools that prevents their widespread use. [7]

The objective of AIxCC is to facilitate innovation at the intersection of AVD&R and AI to secure widely used code that underpins critical infrastructure.

PHASE I: This is a Direct to Phase II (DP2) solicitation. Therefore, Phase I proposals will not be accepted or reviewed. Phase I feasibility will be demonstrated through evidence of: a completed feasibility study or a basic prototype system; definition and characterization of properties desirable for both Department of Defense (DoD) and civilian use; and comparisons with alternative state-of-the-art methodologies (competing approaches). This includes determining, insofar as possible, the scientific and technical merit and feasibility of ideas appearing to have application to the core objective of developing a framework for scalable and automated discovery of vulnerabilities in arbitrary complex systems. Proposers interested in submitting a DP2 proposal must provide documentation to substantiate that the scientific and technical merit and feasibility described above have been met and describe the potential military or commercial applications. DP2 documentation should include:
• technical reports describing results and conclusions of existing work, particularly regarding the commercial opportunity or DoD insertion opportunity, and risks/mitigations, assessments;
• presentation materials and/or white papers;
• technical papers;
• test and measurement data;

- prototype designs/models;
- performance projections, goals, or results in different use cases.

This collection of material will verify mastery of the required content for DP2 consideration. DP2 proposers must also demonstrate knowledge, skills, and ability in computer science, mathematics, physics, electrical engineering, and/or software engineering or related disciplines. For detailed information on DP2 requirements and eligibility, please refer to the DoD BAA and the DARPA Instructions for this topic.

PHASE II: The goal of AIxCC is to leverage advancements in AI and ML, such as LLMs, to semi-automatically discover and remediate software vulnerabilities at speed and at scale to secure widely used critical code. These systems should be well documented and tested against a suit of tests to determine efficacy.

DP2 proposals should:
- describe a proposed system to achieve the aforementioned goals and
- present a technical plan and approach, with notable risks/mitigations.

Phase II will include a test and evaluation event where the system must demonstrate its efficacy against a set of AVD&R challenges.

A Phase II Option period will further mature AIxCC systems to expand applications to additional technology transition and prototype activities for the DoD, another Federal agency, or the private sector. The below schedule of milestones and deliverables is provided to establish expectations and desired results/end products for the Phase II and Phase II Option period efforts.

Schedule/Milestones/Deliverables:

Proposers will execute a Research and Development (R&D) plan as described in their proposal including the following fixed payable milestones for this program:
- Month 1: Phase II Kickoff briefing (with annotated slides) to the DARPA Program Manager (PM) including: any updates to the proposed plan and technical approach, risks/mitigations, schedule (inclusive of dependencies) with planned capability milestones and deliverables, and plan for prototype.
- Month 3: Technical progress report detailing technical progress to date, tasks accomplished, risks/mitigations, a technical plan for the remainder of Phase II (while this would normally report progress against the plan detailed in the proposal or presented at the Kickoff briefing, it is understood that scientific discoveries, competition, and regulatory changes may all have impacts on the planned work and DARPA must be made aware of any revisions that result), planned activities, trip summaries, and any potential issues or problem areas that require the attention of the DARPA PM.
- Month 6: Test and evaluation of final prototype via participation in an AIxCC competition event.
- Month 9: Final technical progress briefing (with annotated slides) to the DARPA PM. Final architecture with documented details and any other necessary documentation (including, at a minimum, user manuals and a detailed system design document; and the commercialization plan).

Phase II Option Period
- Months 12 and 15 (Phase II Option period): Technical progress reports detailing technical progress to date, tasks accomplished, risks/mitigations, a technical plan for the remainder of the Phase II Option period (while this would normally report progress against the plan detailed in the proposal or presented at the Kickoff briefing, it is understood that scientific discoveries, competition, and regulatory changes may all have impacts on the planned work and DARPA must be made aware of

any revisions that result), planned activities, trip summaries, and any potential issues or problem areas that require the attention of the DARPA PM.

- Month 18 (Phase II Option period): Test and evaluation of matured prototype via participation in an AIxCC competition event.
- Month 22 (Phase II Option Period): Final Phase II Option period technical progress (with annotated slides) to the DARPA PM. Final architecture with documented details and any other necessary documentation (including, at a minimum, user manuals and a detailed system design document; and the commercialization plan).

PHASE III DUAL USE APPLICATIONS: AIxCC has potential applicability across DoD and commercial entities. For USG, AIxCC is well-suited for scaled cybersecurity analysis of real-world systems. AIxCC has the same applicability as the USG for the commercial sector.

Phase III refers to work that derives from, extends, or completes an effort made under prior SBIR funding agreements, but is funded by sources other than the SBIR Program. The Phase III work will be oriented towards transition and commercialization of the developed AIxCC frameworks. The proposer is required to obtain funding from either the private sector, a non-SBIR Government source, or both, to develop the prototype into a viable product or non-R&D service for sale in military or private sector markets. Primary AIxCC support will be to national efforts to explore the ability develop automated cybersecurity tools applicable to real-world systems. Results from AIxCC are intended to improve cybersecurity posture and assessment across government and industry.

REFERENCES:
1. Carnegie, "Timeline of Cyber Incidents Involving Financial Institutions," 2022. [Online]. Available: https://carnegieendowment.org/specialprojects/protectingfinancialstability/timeline.
2. A. Haines, "DNI HAINES OPENING STATEMENT ON THE 2023 ANNUAL THREAT ASSESSMENT OF THE U.S. INTELLIGENCE COMMUNITY," DNI, 2023.
3. Dragos, "ICS/OT CYBERSECURITY YEAR IN REVIEW 2022," Dragos, 2022.
4. B. Miller, CS 736 Fall 1988, 1988.
5. OpenAI, "Evaluating Large Language Models Trained on Code," 2021.
6. D. Sobania, M. Briesch, C. Hanna and J. Petke, "An Analysis of the Automatic Bug Fixing Performance of ChatGPT," in arXiv:2301.08653, 2023.
7. E. Dreibelbis, "Watch Out, Software Engineers: ChatGPT Is Now Finding, Fixing Bugs in Code," PCMag, 27 January 2023. [Online]. Available: https://www.pcmag.com/news/watch-out-software-engineers-chatgpt-is-now-finding-fixing-bugs-in-code.

KEYWORDS: Cybersecurity, Vulnerability Research, Static Analysis, Symbolic Execution, Dynamic Analysis, Computer Network Security

TPOC-1: DARPA SBIR BAA Help Desk
Email: SBIR_BAA@darpa.mil

APPENDIX A: DARPA DIRECT TO PHASE II (DP2) PROPOSAL INSTRUCTIONS

I.   Introduction

A complete proposal submission consists of:

Volume 1: Proposal Cover Sheet
Volume 2: Technical Volume (feasibility documentation and technical proposal)
Volume 3: Cost Volume
Volume 4: Company Commercialization Report
Volume 5: Supporting Documents
       a. Contractor Certification Regarding Provision of Prohibition on Contracting for Certain Telecommunications and Video Surveillance Services or Equipment (Attachment 1) MANDATORY
       b. Disclosures of Foreign Affiliations or Relationships to Foreign Countries (Attachment 2) MANDATORY
       c. Verification of Eligibility of Small Business Joint Ventures (Attachment 3), if applicable
       d. Disclosure of Funding Sources (Attachment 4) MANDATORY
       e. Other supporting documentation
       A completed proposal submission in DSIP does NOT indicate that the mandatory supporting documents have been uploaded. It is the responsibility of the proposing small business concern to ensure that the mandatory documents listed above have been uploaded and included with the proposal submission.
Volume 6: Fraud, Waste and Abuse Training

The Defense SBIR/STTR Innovation Portal (DSIP) provides a structure for building the proposal volumes and submitting a consolidated proposal package. If this is your first time submitting an SBIR or STTR proposal using DSIP, please review detailed training guides at https://www.dodsbirsttr.mil/submissions/learning-support/training-materials. It is the responsibility of the proposing firm to ensure that a complete proposal package is certified and submitted by the close date listed in the topic to which they are responding.

To assist in proposal development, templates Volume 3: Cost Volume have been provided as attachments to the announcement posted at https://www.darpa.mil/work-with-us/for-small-businesses/participate-sbir-sttr-program. Use of this template is mandatory.

NOTE: All proposers are required to submit Volume 4: Company Commercialization Report (CCR).

II.   Proprietary Information

Proposers that include in their proposals data that they do not want disclosed to the public for any purpose, or used by the Government except for evaluation purposes, shall follow instructions in section 4.5 regarding marking propriety proposal information.

III.   DP2 Proposal Instructions

   a. Proposal Cover Sheet (Volume 1)

The Cover Sheet must include a brief technical abstract of no more than 3000 characters that describes the proposed R&D project with a discussion of anticipated benefits and potential commercial applications.

Do not include proprietary or classified information in the Proposal Cover Sheet. If your proposal is selected for award, the technical abstract and discussion of anticipated benefits may be publicly released.

b. Content of the Technical Volume (Volume 2) – White Paper & Slide Deck

White Paper (NTE 20 pages). Provide the following information:
Goals and Impact: Clearly describe what is being proposed and what difference it will make (qualitatively and quantitatively), including a brief discussion on how this directly relates to the topic.

1. Phase I Feasibility: This topic is accepting Direct to Phase II proposals ONLY. To be eligible, proposers must demonstrate that the feasibility requirements outlined in the topic have been met, and achieved outside of the SBIR program.

2. Technical Plan: Outline and address all technical areas and challenges inherent in the approach and possible solutions for overcoming potential problems. Provide specific objectives, metrics, and milestones at intermediate stages to demonstrate a plan for accomplishment of the project objectives. Propose additional appropriate qualitative and quantitative metrics specific to the approach, as needed. Intermediary milestones should occur at no greater than 1-month increments.

3. Management and Capabilities: Designate key personnel who will be involved in the Phase II effort. Provide a brief summary of expertise of the team, including subcontractors and key personnel. Describe the organizational experience in this technology area, previous work not directly related to the proposed effort but similar, existing intellectual property required to complete the project, and any specialized facilities to be used as part of the project. List Government-furnished materials or data assumed to be available. Describe any specialized facilities to be used as part of the project, the extent of access to these facilities, and any biological containment, biosafety, and certification requirements.

4. Transition and Commercialization Plan (5 pages):
    a. Describe the commercial product or DoD system to be developed.
    b. Discuss the potential end users – DoD, Federal, and/or private sector customers. Discuss your business model for this technology (i.e., how to you anticipate generating revenue with this technology?). Who are you selling to directly or indirectly, a supplier, an integrator, or an end user?
    c. Describe your company's funding history. Discuss how much additional funding above this proposed effort (include additional required technology development, staffing requirements, infrastructure requirements, IP strategy costs, etc.) that will be required to bring this technology to market and how you anticipate going about getting that funding (e.g., Govt S&T contracts, investment).
    d. Describe the timeline to maturity for sales or transition to an end user. Describe your IP strategy.
    e. Describe the technology, market, team and business risks associated with this proposed effort and your plan to mitigate these risks.

Slide Deck (NTE 15 slides). Provide the following information (convert the completed deck to a pdf and attach it to the white paper):

1. What are you trying to do and how does this directly relate to the topic?

2. Technology and commercial product: Specifically, what are you proposing to produce – software, system, application? Be specific on what your proposed technology development is targeting as an end state.

3. How is the technology approached today? Who is doing the research, development and delivering products/services? What are the current limitations in the technology and commercial marketplaces?

4. Technical and commercial value proposition: How have you substantiated the feasibility of your approach? What is innovative in your approach and how does it compare to the state-of-the-art? Why do you think it will be successful both from a technical and commercial perspective? If you are successful, what difference will it make? Discuss your proposed business model – how do you expect to generate revenue from your technology?

5. Technical and commercial risks: What are the key technical and commercial challenges and how do you plan to address/overcome these?

6. Technical and commercial market analysis: Who will care and what will the impact be if you are successful? What/who are the markets/industries/integrators/stakeholders that would/should care?

7. Cost, schedule and milestones: Provide a summary of your cost volume. Provide a summary of your schedule and milestones. How much will your proposed effort cost in total? How long will it take? What are your technical milestones for achieving the proposed efforts? What are your transition and commercialization plan milestones? Discuss how much funding will be required to bring your proposed technology to market and execute on your proposed transition and commercialization plan. Include any funding raised to date and expected plans for raising any additional required funding (government contracting revenue, product sales, internal R&D investment, loan, angel or Venture Capital investment, etc.). Describe timeline to maturity for operational use or commercial sales.

8. Management: Overview of team, facilities and qualifications.

9. Technical summary quad chart: Use template provided at https://www.darpa.mil/work-with-us/for-small-businesses/participate-sbir-sttr-program.

10. Commercialization summary quad chart: Use the DARPA Transition and Commercialization Strategy Plan (TCSP) template, located at https://www.darpa.mil/work-with-us/for-small-businesses/commercialization-continued.

NOTE: All letters of recommendation and CVs can be loaded in Volume 5: Supporting Documents.

   c. Format of Cost Volume (Volume 3)

Proposers are required to use the Direct to Phase II – Volume 3: Cost Proposal Template (Excel Spreadsheet) provided at https://www.darpa.mil/work-with-us/for-small-businesses/participate-sbir-sttr-program, under SBIR/STTR BAA FORMS & TEMPLATES. The Cost Volume (and supporting documentation) DOES NOT count toward the page limit of the Technical Volume.

   d. Content of the Cost Volume (Volume 3)

Some items in the Cost Breakdown Guidance below may not apply to the proposed project. If such is the case, there is no need to provide information on each and every item.

ALL proposed costs should be accompanied by documentation to substantiate how the cost was derived. For example, if you proposed travel cost to attend a project-related meeting or conference, and used a travel website to compare flight costs, include a screen shot of the comparison. Similarly, if you proposed to purchase materials or equipment, and used the internet to search for the best source, include your market research for those items. You do not necessarily have to propose the cheapest item or supplier, but you should explain your decision to choose one item or supplier over another. It's important to provide enough information to allow contracting personnel to understand how the proposer plans to use the requested funds. If selected for award, failure to include the documentation with your proposal will delay contract negotiation, and the proposer will be asked to submit the necessary documentation to the Contracting Officer to substantiate costs (e.g., cost estimates for equipment, materials, and consultants or subcontractors). It is important to respond as quickly as possible to the Contracting Officer's request for documentation.

Cost Breakdown Guidance:
1. List all key personnel by name as well as by number of hours dedicated to the project as direct labor. Special tooling and test equipment and material cost may be included. The inclusion of equipment and material will be carefully reviewed relative to need and appropriateness for the work proposed. The purchase of special tooling and test equipment must, in the opinion of the Contracting Officer, be advantageous to the Government and should be related directly to the specific topic. These may include such items as innovative instrumentation and/or automatic test equipment. Title to property furnished by the Government or acquired with Government funds will be vested with DARPA; unless it is determined that transfer of title to the contractor would be more cost effective than recovery of the equipment by the DARPA.
2. Cost for travel funds must be justified and related to the needs of the project.
3. Cost sharing is permitted for proposals under this announcement; however, cost sharing is not required nor will it be an evaluation factor in the consideration of a proposal.
4. All subcontractor costs and consultant costs must be detailed at the same level as prime contractor costs in regard to labor, travel, equipment, etc. Provide detailed substantiation of subcontractor costs in your cost proposal. Enter this information in the Explanatory Material section of the on-line cost proposal form. The Supporting Documents Volume (Volume 5) may be used if additional space is needed.

For more information about cost proposals and accounting standards, see the DCAA publication titled "Audit Process Overview – Information for Contractors" available at: http://www.dcaa.mil.

e. Company Commercialization Report (Volume 4)

The Company Commercialization Report (CCR) allows companies to report funding outcomes resulting from prior SBIR and STTR awards. The Company Commercialization Report (CCR) is required for Phase I and Direct to Phase II proposals. Please refer to the DoD STTR Program BAA for full details on this requirement. Information contained in the CCR will not be considered by DARPA during proposal evaluations.

f. Supporting Documents (Volume 5)

In addition to required DoD documentation and certifications, small businesses may also submit additional documentation to support the Technical Volume (Volume 2) and the Cost Volume (Volume 3) in Volume 5. Firms should fill out and upload the DARPA SBIR XL Milestones Template found on the

DARPA Small Business website under SBIR/STTR BAA FORMS & TEMPLATES at https://www.darpa.mil/work-with-us/for-small-businesses/participate-sbir-sttr-program. See Appendix A Introduction for **required** certifications that must be included in Volume 5. For additional information, see the SBIR 23.4 Annual Program Broad Agency Announcement (BAA) at https://www.defensesbirsttr.mil/SBIR-STTR/Opportunities/.

g. **Fraud Waste and Abuse (Volume 6)**

The Fraud, Waste and Abuse (FWA) training is required for Phase I and Direct to Phase II proposals. FWA training provides information on what represents FWA in the SBIR/STTR program, the most common mistakes that lead to FWA, as well as the penalties and ways to prevent FWA in your firm. This training material must be thoroughly reviewed once per year. Plan ahead and leave ample time to complete this training based on the proposal submission deadline. Knowingly and willfully making any false, fictitious, or fraudulent statements or representations may be a felony under the Federal Criminal False Statement Act (18 U.S.C. Sec 1001), punishable by a fine of up to $10,000, up to five years in prison, or both. Understanding the indicators and types of fraud, waste, and abuse that can occur is critical for the SBIR/STTR awardees' role in preventing the loss of research dollars.